

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1, 3-16 are pending in the application, with 1, 9, 12, 14, and 15 being the independent claims. Claims 1, 6, 9, 12, 14, and 15 are sought to be amended. Claim 2 is sought to be canceled without any prejudice to or disclaimer of the subject matter therein. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicant respectfully requests that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Allowable Subject Matter

Applicant acknowledges with appreciation the Examiner's indication that claims 4, 5, 10, 11, 13, and 16 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Drawings

On page two of the Office Action, the Examiner requested that new corrected drawings in compliance with 37 C.F.R. §1.121(d) be submitted. Accordingly, Applicants submit the corrected drawings herein.

Rejections Under 35 U.S.C. § 112

On page two of the Office Action, claim 14 was rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Specifically, the Examiner stated that, "the limitation of an IDFT module which is not shown in receive section." Applicants note that claim 14 has been amended to address the Examiner's rejection. Accordingly, Applicant requests that the Examiner reconsider and withdraw the rejection.

On page two of the Office Action, claims 4, 10, 13, and 16 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter. Applicant traverses this rejection.

In rejecting these claims, the Examiner stated that "[r]ange of variable j is not defined in [the] claim or specification." Applicant respectfully notes that the use of variable j is at least defined in paragraphs 30-35. Paragraph [0030] states "[t]he permutation in the jth frame may be considered to be an ordered set of integers $[n_{j1}, n_{j2}, n_{j3}, \dots, n_{jn}]$. $[n_{j1}, n_{j2}, n_{j3}, \dots, n_{jn}]$ thus represents the permutation of the first n position integers $[1, 2, 3, \dots, n]$ for the jth frame." Paragraph [0033] describes an example for a first frame having four tones, stating "[t]his can be represented as the permutation $[n_{11}, n_{12}, n_{13}, n_{14}]$." Paragraph [0034] describes an example for the second frame stating "[t]his can be represented as the permutation $[n_{21}, n_{22}, n_{23}, n_{24}]$ " and paragraph [0035] describes an example for the third frame stating "the illustration shows the permutation $[n_{31}, n_{32}, n_{33}, n_{34}]$." Thus, Applicant respectfully submits that the range of variable j is clear from at least these paragraphs.

Reconsideration and withdrawal of this rejection is therefore respectfully requested.

Rejections Under 35 U.S.C. § 103

In the Office Action, claims 1-3, 6-9, 12, 14, and 15 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent No. 6,807,234 to Hansen (Hansen). Applicant respectfully traverses this rejection.

Hansen does not teach or suggest each and every feature of Applicant's amended independent claims 1, 9, 12, 14, and 15. Hansen describes a processing path for data including "a scrambler and forward error correction (FEC) unit 22, an interleaver unit 24, and a data tone ordering unit 26" (Hansen, col. 3, lines 13-15). Hansen further describes the operation of the scrambler stating that "[b]inary streams can be scrambled and forward-error corrected by the scrambler and FEC units 22, 28, 24 using suitable methods and techniques, such as those that are known in the art ... details of scrambling techniques and Reed-Solomon forward error correction can be found in International Telecommunication Union - Telecommunication Standardization Sector, 'Draft Recommendation: G.992.2 - Splitterless Asymmetric Digital Subscriber Line (ADSL) Transceivers.'" (Hansen, col. 3, lines 31-42).

Applicant's claimed invention overcomes the limitations of these techniques. As stated in Applicant's specification, "the bits of the frame are scrambled and interleaved in successive frames so that the [sic] each bit of the frame is not, as in the present standard G.992, always assigned to the same tone but is assigned to different tones in different frames." (Specification, paragraph [0012]).

Thus, Hansen does not teach or suggest a method including "assigning the bits of each frame to the plurality of discrete tones such that each discrete tone is assigned the allocated respective number of bits and wherein a permutation mapping the bits of each frame to each of the discrete tones cycles through a sequence of different permutations in successive frames, wherein a bit in a frame bit position is mapped to a different discrete tone in a plurality of successive frame assignments," as recited in Applicant's amended claims 1 and 15.

Furthermore, Hansen does not teach or suggest a system including "a tone generator for assigning the bits in each frame to a plurality of discrete tones such that each discrete tone is allocated a predetermined respective number of bits, wherein a permutation mapping the bits of each frame to each of the discrete tones cycles through a sequence of different permutations in different frames, wherein a bit in a frame bit position is mapped to a different discrete tone in a plurality of successive frame assignments," as recited in Applicant's amended independent claim 9.

Hansen also does not teach or suggest a method including "decoding the received symbols according to the predetermined sequence of different permutations to regenerate the bit stream, wherein the predetermined sequence of different permutations maps a bit in a frame bit position to a different discrete tone in a plurality of successive frames," as recited in Applicant's amended independent claim 12. Further, Hansen does not teach or suggest a system including "a tone decoder, wherein the tone decoder is configured to decode the received symbols according to a predetermined sequence of different permutations to regenerate an original bit stream, wherein ... the predetermined sequence

of different permutations maps a bit in a frame bit position to a different discrete tone in a plurality of successive frames," as recited in claim 14.

For at least these reasons, independent claims 1, 9, 12, 14, and 15 are patentable over Hansen. Therefore, Applicants request favorable consideration of independent claims 1, 9, 12, 14, and 15. For at least these reasons, and further in view of their own features, claims 3 and 6-8 which depend from claim 1 are patentable over Hansen. Reconsideration and withdrawal of the ground of rejection is therefore respectfully requested.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicant believes that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.



Robert Sokohl
Attorney for Applicant
Registration No. 36,013

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1100 New York Avenue, N.W.
Washington, D.C. 20005-3934
(202) 371-2600

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